

## ABSTRACT

The invention intends to reduce noises by resistors in an output filter for a delta sigma modulator. The output filter uses an FIR filter with constant current sources as the current source, extracts output data of the delta sigma modulator from each taps of a shift register, controls MOS transistors by the extracted delayed signals, attains currents weighted according to the FIR filter coefficients corresponding to the number of the taps from the constant current sources, adds the currents attained, and performs the current-to-voltage conversion of the currents thus attained by feedback resistors of a full differential operational amplifier.